Rule WLM707: Frequent log stream DASD-shifts occurred

Finding: The SMF Type 88 data showed that frequent log stream DASD-shifts occurred.

Impact: This finding has a LOW IMPACT, MEDIUM IMPACT, or HIGH IMPACT on the performance of your computer system. The level of impact depends on the applications using the log stream, and the extent to which log stream delays effects the performance of these applications.

Logic flow: This is a basic finding, based on an analysis of the SMF Type 88 system logger data.

Discussion: The system logger is an MVS component that allows an application to log data from a sysplex. You can log data from one system or from multiple systems across the sysplex.

Please refer to Rule WLM701 for more general information about the MVS system logger.

Data in a log stream is contained in two kinds of storage: (1) *interim storage*, where data can be accessed quickly without incurring DASD I/O, and (2) *DASD log data set storage*, where data is "hardened" for longer term access. When the interim storage medium for a log stream reaches a user-defined threshold, the log data is offloaded to DASD log data sets.

There are two types of log streams: coupling facility log streams and DASD-only log streams. The main difference between the two types of log streams is the storage medium system logger uses to hold interim log data:

- In a coupling facility log stream, interim storage is coupling facility list structures.

- In a DASD-only log stream, interim storage is contained in local storage buffers on the system, as an MVS data space areas associated with the system logger address space.

A log stream can have data in multiple DASD log data sets. As an offload data set becomes full, the system logger automatically allocates a new one for the log stream. This process is known as a "DASD-shift" and *generates considerable overhead*. Consequently, a "DASD-shift" should not occur frequently. IBM suggests that "DASD-shifts" should occur no more than once per hour.

The MVS system logger writes SMF Type 88 records containing statistics for each connected log stream. This information is available as MXG TYPE88 file.

CPExpert examines the SMF88EDS variable (the number of log stream DASD shifts during the SMF interval). Recall that IBM suggests that you not have more than one DASD shift per hour. However, an SMF recording interval typically is less than an hour (normally the interval is 15 minutes). Consequently, CPExpert calculates the number of SMF intervals in an hour and tracks the number of DASD shifts that occur during any hour.

CPExpert produces Rule WLM707 when the number of DASD shifts that occur during any hour exceeds the **LGSHIFTS** guidance variable in USOURCE(WLMGUIDE).

The default value for the **LGSHIFTS** is one, indicating that CPExpert should produce Rule WLM707 when more than one log stream DASD shift occurred during any hour.

Suggestion: If CPExpert produces Rule WLM707, you should consider the following alternatives:

- If more than one DASD shift occurs per hour, you should increase the size of the offload data sets. IBM recommends that you size the offload data sets as large as your installation can afford to make them. This will minimize the number of log data sets required to represent a log stream. It will also minimize the number of times that system logger must reallocate and switch to using a new log data set when an old one becomes full.

- You can alter CPExpert's analysis by changing the value of the **LGSHIFTS** guidance variable in USOURCE(WLMGUIDE).

Reference: OS/390 Setting up a Sysplex

OS/390 (V2R4):	Section 9.4.5
OS/390 (V2R5):	Section 9.4.5
OS/390 (V2R6):	Section 9.4.5
OS/390 (V2R7):	Section 9.4.5
OS/390 (V2R8):	Section 9.4.5
OS/390 (V2R9):	Section 9.4.5
OS/390 (V2R10):	Section 9.4.5
z/OS (V1R1):	Section 9.4.5
z/OS (V1R2):	Section 9.4.5
z/OS (V1R3):	Section 9.4.5
z/OS (V1R4):	Section 9.4.5

